

## Claims

1. A magnetic resonance imaging apparatus comprising:
  - a scan executing unit that executes scan to generate sensitivity map data of an RF coil;
  - a region reduction unit that applies region reduction to a signal region near a no-signal region of image data obtained by the scan;
  - a sensitivity map data generating unit that generates sensitivity map data using the image data after the region reduction; and
  - a smoothing processing unit that applies three-dimensional smoothing filter to the sensitivity map data.
2. A magnetic resonance imaging apparatus comprising:
  - a scan executing unit that executes scan to generate sensitivity map data of an RF coil;
  - a sensitivity map data generating unit that generates sensitivity map data using image data obtained by the scan;
  - a linear interpolation unit that linearly interpolates a no-signal region in a patient of the sensitivity map data; and
  - a smoothing processing unit that applies three-dimensional smoothing filter to the sensitivity map data.

3. A magnetic resonance imaging apparatus comprising:  
a scan executing unit that executes scan to generate  
sensitivity correction data for a reception coil in imaging  
using the reception coil in the imaging as a reception coil;  
and

a sensitivity correction data generating unit that  
generates the sensitivity correction data using only data  
acquired by the reception coil in the imaging in the scan as  
original data.

4. A magnetic resonance imaging apparatus according to  
claim 1, further comprising a region growing unit that subjects  
a no-signal region outside a patient of the sensitivity map  
data to region growing.

5. A magnetic resonance imaging apparatus according to  
claim 1, further comprising a slice direction weighting unit  
that weights the sensitivity map data in a slice direction to  
thereby correct the sensitivity map data.

6. A magnetic resonance imaging apparatus according to  
claim 2, further comprising a region growing unit that subjects  
a no-signal region outside a patient of the sensitivity map  
data to region growing.

7. A magnetic resonance imaging apparatus according to claim 2, further comprising a slice direction weighting unit that weights the sensitivity map data in a slice direction to thereby correct the sensitivity map data.

8. A magnetic resonance imaging apparatus according to claim 2, further comprising a data smoothing unit that performs data smoothing processing to transform the sensitivity map data into a smoothed distribution suitable for linear interpolation using an arbitrary transform function and, on the other hand, bringing the sensitivity map data after linear interpolation processing back to a distribution before the data smoothing processing, using an inverse transform function wherein

the linear interpolation unit linearly interpolates a no-signal region of the sensitivity map data after the data smoothing processing and, on the other hand, the smoothing processing unit applies three-dimensional smoothing filter to the sensitivity map data that is brought back to the distribution before the data smoothing processing by the data smoothing unit.

9. A magnetic resonance imaging apparatus according to claim 3, wherein an imaging condition in the scan to generate the sensitivity correction data are conditions to obtain an image of a contrast sufficiently low to use only the data acquired by the reception coil in the imaging as original data of the

sensitivity correction data.

10. A magnetic resonance imaging apparatus according to claim 3, wherein the sensitivity correction data is generated using data after region reduction processing of data extracted by applying threshold value processing to original data of the sensitivity correction data.

11. A magnetic resonance imaging apparatus according to claim 3, wherein the scan executing unit executes the scan to generate the sensitivity correction data using a surface coil as the reception coil.

12. A data processing method for a magnetic resonance imaging apparatus comprising:

a step of applying region reduction to a signal region near a no-signal region of image data obtained by scan to generate sensitivity map data of an RF coil;

a step of generating sensitivity map data using the image data after the region reduction; and

a step of applying three-dimensional smoothing filter to the sensitivity map data.

13. A data processing method for a magnetic resonance imaging apparatus according to the invention comprising:

a step of generating sensitivity map data using image data obtained by scan to generate sensitivity map data of an RF coil;

a step of linearly interpolating a no-signal region in a patient of the sensitivity map data; and

a step of applying three-dimensional smoothing filter to the sensitivity map data.

14. A data processing method for a magnetic resonance imaging apparatus comprising:

executing scan to generate sensitivity correction data for a reception coil in imaging using the reception coil in the imaging as a reception coil; and

generating the sensitivity correction data using only data acquired by the reception coil in the imaging in the scan as original data.